DOCUMENT RESUME

ED 241 247 RC 014 674

AUTHOR Mingie, Walter
TITLE Leaf Activities.
INSTITUTION Protestant School Board of Greater Montreal (Quebec).
PUB DATE 82
NOTE 14p.
PUB TYPE Guides - Classroom Use - Guides (For Teachers) (052)

EDRS PRICE MF01/PC01 Plus Postage.
DESCRIPTORS Art Activities; Elementary Education; Elementary School Mathematics; Elementary School Science; Environmental Education; *Experiential Learning; Language Arts; *Learning Activities; Music Activities; *Outdoor Activities; *Outdoor Education; Sensory Experience; *Teaching Guides; Trees; Vocabulary Development
IDENTIFIERS *Leaves (Trees)

ABSTRACT

Leaf activities can provide a means of using basic concepts of outdoor education to learn in elementary level subject areas. Equipment needed includes leaves, a clipboard with paper, and a pencil. A bag of leaves may be brought into the classroom if weather conditions or time do not permit going outdoors. Each student should pick a leaf, examine it carefully, then describe it to a partner or in a group of three. Vocabulary development is encouraged with use of such words as "leaf," "stem," "vein," and adjectives describing shape and color. Possible learning areas include identifying types of trees by their leaves; language arts (involving oral activities, factual writing, fictional writing, and poetry about leaves); art (using leaves in art projects); music (listening to leaf sounds, finding songs about leaves, and listening to musical compositions that suggest trees and leaves); mathematics (measuring, discussing, counting, and sorting leaves); science (observing and comparing color, structure, size, shape, and odor of leaves); the senses (observing visual, tactile, sound, and scent aspects of leaves); and understanding a leaf (including scientific explanations of the functions of leaves). Four general concepts/aims of outdoor education are given. (Author/MH)

****
* Reproductions supplied by EDRS are the best that can be made *
* from the original document. *
****

THE PROTESTANT SCHOOL BOARD OF GREATER MONTREAL
BUREAU DES ÉCOLES PROTESTANTES DU GRAND MONTRÉAL

"PERMISSION TO REPRODUCE THIS MATERIAL HAS BEEN GRANTED BY
M.R. Fay
TO THE EDUCATIONAL RESOURCES INFORMATION CENTER (ERIC)."

MAR 1984
RECEIVED
ERIC/CRESS

ED241247

U.S. DEPARTMENT OF EDUCATION
NATIONAL INSTITUTE OF EDUCATION
EDUCATIONAL RESOURCES INFORMATION CENTER (ERIC)
✓ This document has been reproduced as received from the person or organization originating it.
☐ Minor changes have been made to improve reproduction quality.
• Points of view or opinions stated in this document do not necessarily represent official NIE position or policy.

RC014674

LEAF ACTIVITIES

FALL - 1982

WALTER MINGIE
Consultant in Physical Education
and Outdoor Education

THE PROTESTANT SCHOOL BOARD OF GREATER MONTREAL
BUREAU DES ÉCOLES PROTESTANTES DU GRAND MONTRÉAL

GENERAL CONCEPTS OF OUTDOOR EDUCATION

The general concepts of outdoor education are:

1. Students should be actively involved in learning in the out of doors. When this is not possible, material obtained out of doors may be used in the classroom as a motivation for outdoor lessons.

2. Students should work in small groups to encourage verbalization. The skills of listening and speaking are practised no matter what the specific activity.

3. The lesson taking place out of doors should be so well planned and structured that advantage can be taken of the "teachable moment" and changes can be made at a moment's notice.

4. Sharing the results of the experience with others is important. It makes the experience seem more worthwhile, reinforces the learning which has taken place, and permits the students to learn from each other's experience.

WALTER MINGIE
Consultant in Physical Education
and Outdoor Education

LEAF ACTIVITIES

FOREWORD

Leaf Activities can provide a means of using the basic concepts of outdoor education to learn in the subject areas.

Equipment needed:

1) leaves, (a bag of leaves may be brought into the classroom if weather conditions or time does not permit going out of doors).

2) paper on a clip board.

3) a pencil.

Activity

Have each student pick a leaf of his/her choice. After examining it carefully, he/she should describe it to a partner or in a group of three. Encourage vocabulary development with the use of words such as, leaf, stem, veins, and adjectives to describe shape and colour.

The following activities are suggested in the appropriate area of the curriculum at the elementary school level. These activities may be modified depending on the student's age.

WALTER MINGIE

.....

LEAF ACTIVITIES

CONTENTS

		Page No.
1.	Types of Leaves	1
2.	Language Arts	2
3.	Art	3
4.	Music	4
5.	Mathematics	5
6.	Science	5
7.	The Senses	6
8.	Understanding a Leaf	7

.....

1. TYPES OF LEAVES

In the summer, trees can be identified by their leaves. Pine leaves are so narrow that they are called "needles". Many other kinds of trees have needles. They all belong to a group of trees called "conifers". Conifer means cone bearer, and most conifers are evergreen trees.

Almost all the trees that are not conifers are called broad-leaved trees. These are deciduous trees. In the parts of the world which have cold winters, they shed their leaves in the fall and get new ones in the spring. Often their leaves become bright red or yellow before they fall off.

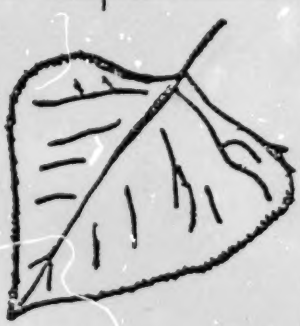
The following leaves may aid you in identifying the trees:

Silver Maple

Red Maple

Northern Red Oak

Sandbar Willow



Cottonwood Poplar

White Ash

2. LANGUAGE ARTS

Many activities in the language arts can be adapted for use in the out-of-doors. These activities can be organized 1) oral activities, 2) factual writing, 3) fictional writing, and 4) poetry.

1) Oral Activities

a) Discuss the life story of a leaf - from spring to fall.

b) Discuss the purpose of leaves in the life of a tree.

c) Pretend you and your friend are leaves from two different trees. Talk to each other about your life, describing what you do or what you see.

2) Factual Writing

a) Write a paragraph about "A leaf in Spring".

b) Keep a log or record about a particular leaf.

c) Write a description of a leaf for someone who has never seen one.

d) Write a newspaper article describing leaves in the fall.

3) Fictional Writing

Write a short story entitled "What if ..... ?"

a) What if trees had no leaves ?

b) What if all trees were of the same kind ?

c) What if trees did not lose their leaves ?

Find a word puzzle. See if you can find the names of these trees in the maze, either parallel, perpendicular or diagonal.

ASH	MAPLE
ASPEN	OAK
BIRCH	PINE
ELM	SPRUCE
FIR	WALNUT
HEMLOCK	YEW

H	A	W	C	N	A	S	T
O	J	O	E	H	T	S	O
M	A	P	L	E	S	P	T
A	S	K	M	M	O	R	E
A	H	W	A	L	N	U	T
A	O	P	R	O	Q	C	K
J	B	I	R	C	H	E	N
O	R	N	R	K	E	Y	E
B	Y	E	Y	Y	E	W	H

4) Poetry

a) Try writing a limerick about leaves, for example:

There was an old man from Dundee
Who kicked the leaves under a tree
But some very large bees
Stung his nose and his knees
So he soon went back to Dundee

b) One line poetry.
A group of four children might have fun writing group poetry about leaves. Each child writes a line and hands the paper to the next person. That person tries to write a line which blends with the preceding one, then hands the paper to the next person. The group may want to revise the poem until they are satisfied with the results.

3. ART

1. Prints - Use white or black shoe polish to cover the leaf then print on black or white paper.
   - Dip in paint and print on manilla paper.

2. Preserving Leaves for Displays
   - Coat with liquid wax.
   - Press between two pieces of wax paper.

3. Construction
   - Make leaf people by stapling the leaf to backing and add head and arms and legs.

4. Rubbings - Use chalk or pastels to show positive and negative shapes.
   - Teach overlapping for perspective.

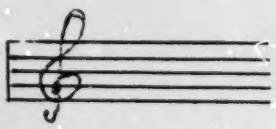
5. Photography

- Photograph leaves in the summer and autumn to show the variety and changes in colour during different times of the year.

6. Arrangements

- Emphasize variety of shapes in a number of arrangements (e.g., collage, etc.).

4. MUSIC



1. Sounds - Listen and describe the sounds leaves make when:

   a) The wind blows through the tree
   b) You rake them
   c) You walk through them
   d) You burn them

   Are the sounds made from items (a) to (d) high or low ?
   Show where you think they would fit on a musical staff.

2. Rhythm - Find as many songs as you can about leaves. Clap each rhythm.

3. Listening

   - When you listen to a composition, e.g., Beethoven's Pastorale, do you hear the musical phrases that would suggest trees and leaves ? What time of year might this be ? Listen to the music again and draw a picture of what you "see".

5. MATHEMATICS

1. Discuss the leaf's physical dimensions.
   a) Measure its width and length.
   b) How thick is it ?
   c) What is its mass ?
   d) What is the area of one side of the leaf ?
2. Is the leaf symmetrical ?
3. Are all leaves symmetrical ?
4. How would you find out how many leaves a box measuring 30 cm x 20 cm x 20 cm would hold ?
5. Have students arrange a collection of leaves in order of size (smallest to largest).
6. Count the leaves by 1's, 2's, etc.

6. SCIENCE

Observation and Comparison:

Make a chart using the following headings:

e.g.	Leaf No. 1	Leaf No. 2
Colour		
Structure		
Size		
Shape		
Odour		

What is the category of the leaf ? What is its common name ?
Talk about the function of the leaf while it is on the tree.
Does it serve any purpose when it falls off the tree in the autumn ?
Do all trees lose their leaves in the autumn ? Why ? Why not ?
What kind of conditions does the tree need to grow ? Discuss soil, air, temperature, sunshine, rain, competition with other trees.

7. THE SENSES

The following items may offer you some guidelines:

Visual: What does your leaf look like ?

Colour - Are there different colours in the same leaf ?
Are there different shades of the same colour ?

Shape - Is the leaf round, pointed or some other shape ?

Other features - Are there veins ? Is the leaf perfect or are there holes in it ?

Tactile: What does your leaf feel like ?

Upper surface - Is it smooth, sticky, soft ?
Under side - Is it different from the upper surface ?

Sound: What sounds can you make with the leaf ?
Does it make any noise when you drop it ?

Smell: What aroma does your leaf have ?
Is there a different smell to different leaves ?

8. UNDERSTANDING A LEAF

Why do leaves of many trees turn colour in the fall?

Did you know that this fiery transformation has been called the greatest natural spectacle on earth?

Are you aware that it is a striking example of prudent conservation?

The changing colour and impending death of the leaf are linked in a cycle that assures that the tree will live.

How do leaves change colour, and why do some turn red and some turn yellow. Why are some autumns more colourful than others? What produces the chemical motion inside the leaf and inside the tree itself?

"The leaf is a food farm for its tree. By photosynthesis - using water, carbon dioxide and the chlorophyll-containing tissue in the leaf - it manufactures the proteins and carbohydrates needed by the tree and returns oxygen to the atmosphere through its pores.

In late summer the "farm" slows down, responding to decreased sunlight and cooler temperatures that eventually bring the photosynthetic process to a halt. The green chlorophyll makes its exit, some of it travelling through the leaf stem to the tree, the remainder leaching into the air. Simultaneously, a disk of cells near the base of the leaf stem starts to turn to a cork-like substance. This "abscission" layer spreads across the stem, gradually cutting off the leaf's water supply.

In the absence of green chlorophyll, colourful pigments that were in the leaf all summer, but masked by the even greater quantities of chlorophyll, begin to show. Xanthophyll (meaning "yellow leaf"), is one. It creates the striking yellows of the quaking aspen, the most widely distributed tree in North America. Xanthophyll also gives ashes, poplars, and willows their familiar yellow colouration.

Carotenes, the yellow, orange and reddish pigments, paint the birches, and sycamores. And the anthocyanin pigments give sumac, cherry, and dogwood a broad spectrum of reds and purples. A single sugar maple tree may display several shades of red, while the scarlet oak is at the darker, more uniform end of the spectrum. Without these pigments, the trees would act like their deciduous relatives in the tropics, where leaves seldom display any significant colouring other than varying shades of green.

While all of this is happening, the leaf's nutrients - carbohydrates, nitrogen, phosphorus, potassium, proteins and other minerals - are absorbed back into the tree's roots, trunk, and branches for storage until they are needed the following spring. Then the choked, weakened leaf base is left vulnerable to whatever will knock it from the branch - a gust of wind, a rain shower, an animal brushing against it." *

Dying leaves help the tree in two important ways. Firstly, they stop their demands on the tree's water supply at a time when the roots can no longer readily absorb water from the cold soil. Secondly, on the ground, the decaying leaf eventually turns to a nurishing humus, from which the tree's roots will eventually absorb food.

There are several factors which affect the leaves colouring. One is temperature, the preferred being a normal cycle of chilly nights and warm days, with no sudden cold snaps.

Dry winters and summer droughts, spring's gypsy moths and summer's voracious caterpillars - these also determine the quality of fall colour. Hostile conditions cause many species to bypass some normal chemical changes in order to shut off the life of the leaf as soon as possible.

But if there has been enough water, minimal insect chewing, proper temperatures, the prospects for a brilliant fall display are excellent.

"Like a wine whose character is unknown until after harvest and fermentation, the character of this season's leaf change will not be obvious until the time for enjoying it" ..... Mathew Wald, New York Times.

* Acknowledgement for the scientific explanation is given to Denise Van Lear, Backpacker, November 1982.